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F. JORDAN : ABORIGINAL FISHING STATIONS

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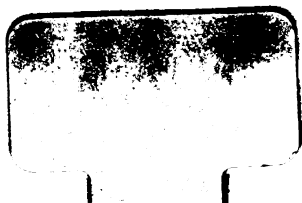
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ABORIGINAL  
FISHING STATIONS

ON THE COAST OF  
THE MIDDLE ATLANTIC STATES

BY

FRANCIS JORDAN, JR.

*Member of the American Philosophical Society  
Vice-President of the  
Numismatic and Antiquarian Society of Philadelphia, etc.*



PHILADELPHIA  
1900













PLATE I. REMAINS OF PILE DWELLING VILLAGE ON MARSH NEAR TUCKERTON, NEW JERSEY.  
CENTRE OF SHELL MOUND EAST SIDE.

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## ABORIGINAL FISHING STATIONS ON THE COAST OF THE MIDDLE ATLANTIC STATES.

### THEIR CHARACTERISTICS.



N that part of the Atlantic seaboard lying directly east of the Alleghanies, which embraces the Middle Atlantic States, the remains of the aboriginal American have no features that arrest the attention of the superficial observer, and hence their identification requires some little knowledge of archaeological field work. Here there are no vast sepulchral mounds nor other structures of a prehistoric origin, such as astonish the beholder in the valley of the Mississippi. As we approach the walls of the Alleghanies from the west those ancient monuments of a mysterious and extinct civilization gradually fade away, and having crossed that barrier abruptly disappear; a fact which must convey a significant meaning to the student of American ethnology.

There are, of course, Indian graves in the district we are considering, and they contain the usual mortuary objects, but they rarely have any visible existence.<sup>1</sup> These unmarked tombs are about the

<sup>1</sup>The mortuary objects from a grave on the Atlantic slope have a direct bearing on its antiquity. If articles of European

depth of a modern plough-share, generally the medium of their discovery, and one very apt to destroy or mutilate the contents.

As the aborigine of our eastern coast, unlike his brother of Continental Europe, obviously lived an arborial life, cave dwellings are almost unknown whence we might hope to find traces of his primitive life. If he sought the shelter of a cave, it was a contingency, not a custom; he did not adopt it as a permanent habitation. It is true caves have occasionally been found in the Middle States containing implements and bones, but in their general character the objects suggest a secret work shop or storage house rather than a domicile.<sup>2</sup>

manufacture are found associated with those of native origin, such as trinkets of brass and glass and cooking utensils and weapons of iron—which the Indians obtained by barter from the whites—the age of the grave must be limited to the early colonial period. Dissociated from the former it may exceed five hundred or a thousand years.

<sup>2</sup>Of these perhaps the most important was found in 1878 by Professor S. S. Haldeman (Samuel Stehman Haldeman, naturalist, born in Locust Grove, Pa., August 12, 1812; died September 10, 1903) at the base of a cliff washed by the Susquehanna River, at Chickies, Pa. It could not be approached from the land side, and discovery from the water was effectually concealed by shrubbery. It was a secure and almost impregnable hiding place. Professor Haldeman stated that it had served as a retreat and lapidary's shop for not less than two thousand years, and it was also clear that it had not been occupied within two hundred years. It contained one hundred and fifty stone implements, consisting of arrow-heads, tomahawks and flaking-hammers, innumerable stone chippings and the bones of various animals. Many of the articles were found at a depth of thirty

Although there are no great tumuli on the Atlantic Coast, it does not follow that this part of the United States is destitute of aboriginal remains. On the contrary, as in its prehistoric village sites, in which environment plays an important part, the Middle States possess archaeological features that, if they do not equal, exceed in variety of

inches, underlying a rich black mold. Human bones were absent.

See a paper entitled "Contents of a Rock Retreat," read before the American Philosophical Society, June 21, 1878, published in its proceedings.

The Rt. Rev. John Etwein, a Moravian missionary, who labored among the Indians in colonial days, encountered cave tombs in his journeys over the mountains in Pennsylvania, although he made no examination of their contents. His interesting daily journal, written in German, has recently been found in the archives of the Moravian Church at Bethlehem, Pa., in which, under date of April, 1768, he says: "In descending the Wyoming Mountain into the Valley my Indian guide pointed out a pile of stones which he said indicated the number of Indians who had climbed that Mountain, it being the custom for each one to add a stone to the heap in passing over the trail. The Shawnees have all left the Wyoming and Susquehanna; the only traces of them are their places of burial in crevices and caves in the rocks at whose entrance stand large painted stones."

It was Etwein who in 1768 first brought to public notice the existence of the sepulchral mounds in the Mississippi Valley. These amazing structures which attracted his attention on the Muskingum and Ohio rivers were so completely at variance with the capabilities of the present race of Indians as he knew them, that he unhesitatingly expressed it as his belief that they were the creation of a remote and far more enlightened people.

Many years after he had recorded his observations an expedition under the auspices of the Smithsonian Institution made a survey of the ground plan of the largest mounds and a study of

interest the antiquities of the Mississippi Valley. The former are better preserved on or near the sea, and while they may not inspire the beholder with awe or wonder, almost as much may be learned from them of aboriginal culture as from the imposing relics of the mound builders.

One may expect to find these deserted fishing stations, for such they really were, on the shores of all the bays and inlets that indent the low sandy coast-line of New Jersey, Delaware and Maryland, where fish and mollusks of unsurpassed quality were abundant.

In the following pages I shall endeavor to describe their prominent characteristics—where the remains have survived the leveling process of the

their contents, which fully warranted this belief. Etwein and his coadjutors, among them the Revs. John Heckewelder and David Zeisberger, penetrated the wilderness far in advance of the earliest white settlement, and to these zealous and self-denying men we are indebted for the most authentic accounts, written in the simple but expressive language of the Moravian missionary, of the life and character of the Indians of the eastern coast of the United States prior to the American Revolution.

Heckewelder's contributions to our knowledge of the aboriginal American are particularly valuable as they include a vocabulary of the principal words and phrases of the Delaware tongue, together with the names of the rivers, lakes and mountains of New Jersey, Pennsylvania, Maryland and Virginia. A daughter of Heckewelder, who married a Moravian missionary by the name of Holland, was the first female white child born in the State of Ohio, and incredible as it may sound in the year 1905, in which I write, I had the pleasure of meeting her in her declining years.

elements and the modern ploughman—from which we are permitted to learn something of the domestic economy of these ancient fishermen and their means of subsistence.

Heaps of discarded shells and kitchen refuse, in some instances of extraordinary size, indicate their locality. I venture to say that nowhere else on our eastern coast are there so many unmistakable evidences of a large aboriginal population. Where the settlements were not permanent, as were those on the Chesapeake and upper Delaware Bay, they were abandoned in winter and revisited with every recurring autumn.

In selecting a site for this purpose adaptability was the first consideration. An elevation safe from inundating tides, a water course which gave easy communication with the open bay or sea, and proximity to fresh water and timber were the essentials. Here the natives sought the invigorating air of the sea and its attractive fisheries with an avidity which we of the present day have only followed. Those who composed these annual excursions were principally the nearby tribes, but that others from the interior participated, is shown by the discovery on our eastern coast of objects made from metal and bone that have an exclusive origin west of the Alleghanies; silent witnesses of an intercourse between widely separated tribal communities.

Primarily the object of these visits to the sea-coast was to obtain a supply of fish and mollusks,



which were dried for winter consumption; an aboriginal industry of the first importance. As a fisherman the Indian was an expert, as shown by his ingeniously made hooks and sinkers to be found on the seashore and on the banks of every inland water course.

As to the composition of the debris of a fishing station, it is the same the world over, differing only in animal remains and some forms of implements. On the Middle Atlantic coast oyster, clam and mussel shells predominate in the order of their mention, intermingled with charcoal and broken pottery, and supplemented by vegetable and animal matter, such as the seeds of small fruits, crab shells, animal and fish bones. Smoke-discolored, cracked and calcined boulders are also an important constituent, are easily recognized as hearth-stones, and although rude and shapeless, their association with the domestic life of the Indian gives them a distinct interest.

Large flat stone platters, irregular in shape, varying from six to twelve inches in length and two inches in depth, with an artificially worked concave surface, are frequently met with among the debris and are all more or less fractured. Found among the shells, they tell their own story, as it was on these stones that the shells of the mollusks were removed with the aid of hammer-stones, the rudest implement known to the stone age. These latter were selected from ordinary cobbles

just large enough to be firmly held in the hand. Finger pits occur on one and occasionally on both of their flat sides, and their battered and abraded condition shows the part they performed in the operation of shucking.

In a word, the objects found among the discarded shell-mounds are such as one would expect to find in any modern rubbish heap, broken and valueless. An unbroken implement or ornament, or what is of a far greater value, a perfect specimen of pottery, is rarely if ever met with. In my wanderings along the Atlantic Coast I have examined many aboriginal shell-mounds, but, save pitted hammer-stones, I have found few perfect articles of stone, and as to pottery, although fragments are abundant wherever a camp site exists, I recall but one shred large enough to accurately determine the size of the vessel of which it was a part.

In some respects the composition of a shell-heap is as important to the naturalist as to the archaeologist; for example, when the bones of an extinct bird or mammal, or one that has ceased to be indigenous, are found among the shells, and these, together with a study of the layers or strata of the mound, if its depth will permit, enable us to reach some rather vague conclusion as to its antiquity. As to the latter, however, any absolute determination is impossible, and yet it is but natural to regard some at least of the deposits as the accumulations of centuries.

Not infrequently human bones have been discovered, and in view of their association with the embers and kitchen refuse of a primitive people, naturally suggest cannibalism. Happily for the fair fame of the North American Indian, both history and tradition are silent as to this practice, and no material evidence exists nor is likely to be found at this date. There may have been isolated cases of cannibalism, but it certainly never existed as a custom.<sup>1</sup>

<sup>1</sup>Burial in a shell-mound was occasionally adopted, and as direct contact with the shells promoted disintegration, may have been given the unknown dead. Among others, the eminent naturalist, Dr. Joseph Leidy, mentions having found human bones in a shell-head at Lewes, Delaware, in 1874, which he distinctly says were not the remains of a cannibalistic feast.

It may be well to add that in the summer of 1901 Mr. Walter Hough, of the National Museum at Washington, D. C., reported the discovery of human bones among the remains of an ancient pueblo adjoining the famous petrified forest of Arizona, which he claims indicated cannibalism. Although I am not prepared to accept his conclusions as final, I give them in his own words without further comment: "A tragedy of long ago came to light during excavations around this village. . . . Among other orderly burials was uncovered a heap of broken human bones. It was evident that the shattered bones had been clean when they were placed in the ground, and some fragments showed scorching by fire. The marks of the implements used in cracking the bones were still traceable. Without doubt this ossuary is the record of a cannibalistic feast, and its discovery is interesting to science as being the first material proof of cannibalism among our North American Indians."





PLATE II. SECTION OF MOUND EXPOSING SHELLS, TUCKERTON, NEW JERSEY.

## FISHING STATIONS ON THE NEW JERSEY COAST.

*Pile Dwellings.*

The environment of a shell-mound must also be accounted for, and in one instance to which I am about to draw your attention indicated a phase of aboriginal domestic life hitherto unrevealed. I refer to the custom of erecting huts on shallow bays and inlets upon piling, known as pile dwellings—perhaps man's earliest attempt to build a domicile for defence. The remains of pile dwellings have been found in England, Ireland and on the continent of Europe and are classified with the bronze age; and no one acquainted with the subject would be surprised at their discovery on the eastern coast of the United States, as in 1499 Alonzo de Ojeda, who had accompanied Columbus on his first expedition to the new world, found them in the bay of Venezuela. Twenty huts composed this settlement, to which he gave the suggestive name of "Venezuela," or "Little Venice." Similar structures were also found on the Gulf of Maracaibo and by the early travelers on the coast of Mexico, and they are still in use by the half-civilized Indians on the Gulf of Mexico.

With the hope of confirming a long entertained belief that remains of this character might be found anywhere south of Sandy Hook, I visited many points on the New Jersey coast where the shallow and protected water-ways invited their construc-

tion. While thus engaged in the autumn of 1888 my attention was drawn to a large curiously situated shell-mound near Tuckerton. Although my opportunities for a complete examination were then unfavorable, I ventured to express the opinion that its position, isolation and significant shape suggested the refuse of a group of huts built over the water. When I again visited Tuckerton in 1892 under conditions that permitted a more careful study of the mound and its surroundings, my conclusions seemed fully verified, and I am glad to state were corroborated by investigations subsequently conducted by the late Frank Hamilton Cushing.<sup>1</sup>

This remarkable deposit stands about a mile from the mainland on Egg Harbor Bay, and as far as the eye can see is the one solitary object on this apparently illimitable salt meadow. It is impracticable to reach the mound except in midsummer when the numerous rivulets which intersect the marsh are dry, and then only by sailing down Tuckerton Creek to a point nearest the mound and thence across the intervening marsh on foot. No single aboriginal shell-heap on the coast of the North Atlantic States equals it in size or is similarly situated; and as its position is inconsistent with the well known custom of the American Indian not to

<sup>1</sup> Frank Hamilton Cushing, author and ethnologist, born at Northeast, Pa., July 22, 1857. Connected with the Powell expedition to Mexico in 1879. Conducted expeditions in the interests of archaeology among the Zuni Indians and in Florida. Died in Washington, D. C., April 10, 1900.

select a village site where destruction from tidal influences was inevitable, it was natural to inquire concerning its surroundings during the formative period.

Instead of a shallow layer of shells distributed over a considerable area, here is a large single mound on an exposed marsh, and if the latter were once an integral part of the bay, of which there is no reasonable doubt, the mound during its formation was surrounded by water.

In this connection it may be proper to mention that after my first inspection I made a brief report of my observations to the Numismatic and Antiquarian Society of Philadelphia when was present its late president, the eminent Americanist, Dr. Daniel Garrison Brinton.<sup>1</sup> Following the usual discussion, Dr. Brinton deemed it prudent to remind the Society that the subsidence of the land was an important factor in determining the character of aboriginal remains, particularly when they were found on the coast of the Middle States, and unless this was taken into account, features might be credited to them not rightfully their own. For this reason it was suggested that the conclusions of the observer, when they related to localities affected

<sup>1</sup> Daniel Garrison Brinton, surgeon and archaeologist, born at Thornbury, Pa., May 13, 1837, died July 31, 1899. Professor of American linguistics and archaeology, University of Pennsylvania. His writings include "Notes on the Floridian Peninsula," "American Hero Myths," "Aboriginal American Anthology," "Primer of Mayan Hieroglyphics," "Religion of Primitive People," etc.



by physical changes, should be accepted only after the most thorough investigation.

With this caution constantly kept in view, the writer on his second visit gave this aspect of the subject special consideration, but without discovering the slightest reason for changing his previously expressed convictions. Indeed, it was learned from the earliest recorded data relating to the effect of ocean currents on the coast line of New Jersey, that while that part north of the summer resort of Bay Head had suffered from the encroachments of the sea, south of that point, which takes in Egg Harbor Bay, there had been no subsidence of the land, but on the contrary, a gradual recession of the sea has been in progress for centuries; conditions that in large measure permit us to conclude that within eight hundred or a thousand years the marsh was covered with a shallow depth of water.

Where the marsh joins the mainland the dividing line is accentuated by a sharp rise of about twenty-five feet, and on the crest of this slope, beyond the reach of abnormal tides, a number of Indian graves were uncovered, coincident with my own investigations, exposing the bones of ten adults of both sexes and several children.<sup>1</sup> It was the

<sup>1</sup> One of the skeletons measured over seven feet and was that of a veritable giant. It was plain to be seen that death was caused by a fracture of the skull produced by some blunt weapon. The blood which had congealed along the track of the wound was surprisingly brilliant notwithstanding the lapse of centuries.



**PLATE III. HUMAN BONES FROM INDIAN GRAVES ON MAINLAND, OPPOSITE INDIAN MOUND, TUCKERTON, NEW JERSEY.**



characteristic burial place of the prehistoric American Indian of our eastern coast, with nothing to distinguish it from the common earth. No violent stretch of the imagination is required to connect these people when in life with the village on the marsh at some period in its history, thus sustaining the belief that the marsh was once completely submerged and hence not a place for proper sepulture.

As the mound appears to-day, after suffering from the spoliation of the lime burner and the elements, its proportions are still imposing, as by actual measurement it is over one hundred feet long, rising abruptly from a base fifteen to twenty-five feet across to a mean height of twelve feet above the present level of the marsh. The actual foundation is several feet below the surface, the result of accretions, which in the course of centuries naturally follow the subsidence of the sea.

From the nearest point on the mainland its appearance is striking, although its artificial character is not revealed, owing to a thick verdure which covers the entire surface, until the observer is actually treading among the shells. A remarkable bunch of six venerable weather-beaten cedars crowns the summit and increases the resemblance to a natural formation, as well as adds to its prominence. Three at least of the trees, as shown by their cortical rings, have faced the storms of over two centuries, having attained their growth long after the settlement had been abandoned; and if we

further add to this evidence the years that were necessary to the gradual accumulation of this vast pile of discarded shells, we can form some adequate conception of its age.

Its authorship, however, is enveloped in obscurity, as when Tuckerton was founded in 1764 the Indians had retreated from the coast. Those who lingered in the vicinity through infirmity or inclination did not regard the mound as the work of their progenitors, but of a race much older than their own, of whom they had no knowledge, even of a legendary character. In our day it has served a useful purpose as a land mark for coasting vessels, as well as a station whence the United States Coast Survey made their local triangulations.

After carefully considering the evidence bearing upon its origin, its environment, remarkable size and irregular shape, added to the incontrovertible fact that its formation must necessarily have been made from an elevation, the conclusion seems obvious that the shells represent the refuse heap of a group of pile dwellings, and I believe the only instance of the kind on the eastern coast of the United States thus far brought to the notice of the scientific world.

There is other testimony which must also impress the observer as favoring this contention, and that is the presence of an unusually small proportion of cinders. If we admit the belief that the latter, together with the shells, were swept into

the bay from the threshold of huts erected over the water, we can readily understand that the shells would sink and the charcoal and light material would be carried away by wind and tide.

Plate I. gives a distant view of the center of the Tuckerton mound, taking in the group of cedars. The engraving would seem to indicate a long straight heap of shells, whereas the line is crescent shaped and irregular.

Plate II. gives a nearer view of a section of the mound where the shells are exposed, conveys an impression of its elevation, the magnitude of the deposit and the size of the trees that have taken root upon its summit.

Tuckerton is one of the oldest towns in the State. It was here for almost a century that passengers embarked for Long Beach, a resort for sportsmen across the bay on Ten-Mile Beach. How it came about that a settlement was located at Tuckerton is inexplicable in view of its complete isolation. Sixty miles of an almost impenetrable pine forest intervened between the town and civilization. If the first settlers followed an Indian trail to its destination, which is more than likely, history does not mention it. That it was a favorite fishing station in prehistoric times there is abundant proof if one is inclined to look for it along the banks of Tuckerton Creek and on the high fast land bordering Egg Harbor Bay, where the Indian built his hut.

Within the borough precincts of the town, for example, there is a shady spot of some five acres, now dedicated to picnics and the like, known as Flax Island, once the site of an Indian village of which no trace remains save the fast disappearing debris of the deserted hearths. But this and many other encampments in the neighborhood were unquestionably occupied centuries after the great mound on the marsh had been abandoned.

There are other remains of villages on the New Jersey coast at Keyport, Atlantic City, Summers' Point, Cape May Courthouse and Cape May, but they have no archaeological significance apart from the usual deposit of shells, which in no instance is beyond the ordinary, with the exception of that at Keyport, which Dr. Charles Rau describes in his exhaustive work on "Pre-Historic Fishing in Europe and America," issued in 1885 by the Smithsonian Institution at Washington, D. C.

## DELAWARE VILLAGE SITES.



F the aboriginal village sites on the coast of Delaware it may be said that they are exceptionally numerous. Indeed there is scarcely a spit of elevated sand along the bay and sea coast of the State, from New Castle to Indian River, whereon cannot be found traces of a prehistoric occupation. These were the fishing stations of the Delawares or Leni-Lenâpè, and while many of them are without any special antiquarian value, there are several that well deserve investigation and study; notably one on the sand flats which separate the quaint old pilot town of Lewes<sup>1</sup> from Delaware Bay; another at Long Neck Branch near Cape Henlopen, and a third and the most interesting at Rehoboth on the sea about five miles south of the cape.

Regarding these settlements there is no obtainable data save some incidental references of the Swedish historian Acrelius,<sup>2</sup> whence we learn that in April, 1638, the good ship of war "Key of Kalmar" entered the mouth of Delaware Bay

<sup>1</sup> Rau, "Prehistoric Fishing in Europe and North America," "Smithsonian Contributions to Knowledge," 1884.

<sup>2</sup> Israil Acrelius, clergyman, born in Osterater, Sweden, December 25, 1714. Ordained in 1742, came to America to preside over the Swedish clergy in New Sweden. Author of "Colonies in America," published in 1759, and "Articles on America." Died April 25, 1800.



bearing the first colony of Swedish settlers to the New World under the leadership of Peter Menewee. This little band of adventurers made a landing on the west side of the bay at what was then supposed to be the mouth of an estuary, but which was really a small inlet near the present town of Lewes.

A map in the Swedish Archives prepared by Peter Lindström, who accompanied the expedition as civil engineer, delineates this sheet of water, to which the Swedes gave the name of Blumerkiln or Flower River. No such stream exists at the present day, but an examination of the ground described on the map shows the bed of a dried up inlet. The same expedition bought a strip of land from the Indians along Delaware Bay and river covering the distance between Cape Henlopen and the falls at Trenton. That the natives who were a party to this purchase were an important community would seem a natural inference, as had this not been the case it is hardly probable the Swedes would have acquired title to the territory.

Following their arrival the Indians abandoned their sea coast fishing stations, leaving in their wake heaps of discarded shells that were once a striking feature of the landscape.

As I first saw those at Lewes, forty-five years ago, from the deck of a vessel anchored in the bay, they stretched along the strand for over a mile in the direction of Cape Henlopen and were there en-

veloped in the great sand dune, a marvelous feature of that wild and picturesque locality.<sup>1</sup>

In wandering over the remains at Lewes it was extremely interesting to be able to follow the course and boundaries of the dried-up inlet which were distinctly outlined by the refuse. Midway of what was its widest part, on a plateau elevated above the level of the surrounding flats, the decaying remnants of a solitary tree, known to the people thereabouts as the sweet-berry tree, is a conspicuous object. The conformation of the plateau and its elevation indicate that it was once an island around whose outer edge there are still vestiges of an embankment. One of the traditions of the locality is that the island was the home of a powerful chief, and the quantity of shells and debris, which is greater there than elsewhere on the Lewes sands, gives a certain credence to the story.

After looking over the ground I determined to

<sup>1</sup> Although not germane to the subject, this phenomenal mountain of sand deserves a few words *en passant*. It first becomes prominent at the pitch of the cape, where it rises to a height of nearly one hundred feet and extends westward along the shore of the bay for a quarter of a mile, resembling an enormous snow-drift. In its gradual progress inland it has buried a forest of pines, whose withered tops emerge from the summit in a long line. On a clear day it may be distinctly seen from Cape May on the Jersey Shore.

Through some mysterious vagary of the fierce northeast gales, of comparatively recent years, the sand blown out of the sea has piled itself around the lighthouse until the lantern is barely visible above the level of the dune. The light was built by the English in Queen Anne's reign and is about ninety feet high.

make an excavation near the sweet-berry tree, where I exposed three flat boulders of calcined and discolored sandstone, which from their relative positions embedded among the shells and embers I recognized as hearth stones. Near them I discovered a small polished celt of black jasper, a clay pipe stem and a rough, egg-shaped corn-mill or metatlee of conglomerate rock, twelve inches long and eight inches in diameter, weighing thirty pounds. The distinguishing feature of this and all similar implements is two shallow cup-shaped concavities one on each of its flat sides wherein the corn meal was mixed and prepared for baking. Hence it is misleading to speak of these stones as exclusively corn mills as the excavations were too shallow and the capacity too meagre to admit of convenient or economic grinding. For this purpose portable hollowed-out stumps of trees or small natural rock formations were employed in situ, of the capacity of at least half a bushel.

Very remarkable stone pestles were used in conjunction with these large mortars, astonishing examples of primitive stone cutting. Some of them exceed two feet in length, apparently hewn from the solid rock, symmetrically proportioned, and in some instances ornamented at one end with a carved decoration.

Respecting these corn mills, or more properly dough-boards, previously referred to, there has been considerable speculation as to the reasons for the existence of two excavations.

It has been suggested that in selecting a stone, particularly in a locality where they do not naturally occur, as in southern Delaware, one would be chosen that had two available surfaces. This would appear to give a plausible solution of the question, but is altogether untenable when applied to objects of this nature from any of the Atlantic Coast States. A very fine specimen from the neighborhood of New Castle, Delaware, where once flourished a considerable settlement, exemplifies this contention. This is a triangular-shaped slab of sandstone, flat on both sides, sixteen inches long, eleven inches in its widest part, and nine inches high and weighs seventy-eight pounds. On each side there is a shallow cup-shaped depression less than an inch in depth and six inches in diameter. In short, the shallow concavities are identical in every particular, and there is every reason to suppose were simultaneously drilled. Associated with these corn mills were grinding stones, one of which was afterwards picked up where the mill I have just described was found, which happened to be an unfrequented spot on New Castle Creek, and the interesting manner of its discovery deserves to be recorded.

When Mr. H——, of New Castle, to whom I am indebted for these valuable specimens, sent me the mill, I mentioned that the grinder should be somewhere in the vicinity and if search were made might be recovered. Acting upon this suggestion

the missing stone was found within a few feet of the place where the mill had rested undisturbed for two centuries or more. It is a turtle-shaped cobble just large enough to be conveniently grasped. The under surface, which is almost circular, plainly shows the effect that attrition would produce in the process of grinding, and the oval or top part, where it has been covered by the hand, it will be observed, is worn to a polish as well as artificially stained a deep brown. These specimens have been deposited in the Archaeological Museum, University of Pennsylvania.

#### LONG NECK BRANCH FISHING STATION.

After leaving the remains at Lewes and strolling along the shore for about two miles to the south, we reach Cape Henlopen, which marks the line dividing the waters of Delaware Bay from the Atlantic. A mile and a half southwest of the cape we approach another fishing station which may have been a part of the Lewes village, since it is only separated from it by the great sand dune. A large salt meadow, once a spacious but shallow inlet, known in our day as Long Neck Branch, occupies the northwestern boundary. In the years succeeding the withdrawal of the Indians, this inlet has also succumbed to the enveloping process of the dune in its progress inland, until it has been transformed into a meadow of waving grass which may now be safely crossed on foot. Here the

remains are less extensive than at Lewes, but are so unusually well preserved that the observer naturally looks about him for a cause. The spot is a desolate one. There is no habitation within the range of the eye save the lighthouse at the cape, barely visible above the apex of the sand mountain, which has enveloped the tower from its base to the lantern. Remoteness from the haunts of men—the relic hunter and the lime burner—coupled with the protecting foliage of a pine forest which covers a large part of the deposit, have arrested disintegration. It was easily apparent that the mounds had not been disturbed since their abandonment, as upon the removal of the surface sand the cinders, of which there was an unusual quantity entirely free from extraneous matter, had the fresh appearance of recent combustion. The shell-heaps were from one to two feet high and five to ten feet broad, and followed the shore of the dried-up inlet for half a mile. From one of them, where the charcoal was especially abundant, I raked out from among the embers a surprisingly large amount of broken pottery, and although it represented perhaps a half dozen pots, I was unable to restore from the fragments anything approaching a perfect specimen. A comparison with other fragments from the Delaware coast showed it was characteristic earthenware of the locality, curiously fragile and delicate and blackened with smoke.

I made other excavations where the size and con-

dition of the mounds seemed to invite investigation without discovering anything beyond the usual yield of the village rubbish heap.

In walking through the glades a broad and well-defined trail led from the shell-heaps to a considerable pond of fresh water where the camp dwellers obtained their supply.

#### REHOBOTH VILLAGE SITE.

The third in this series of notable prehistoric village sites is situated on ground now occupied by Rehoboth Beach, a watering place on the Delaware coast four miles south of Cape Henlopen and about nineteen miles from Cape May, which lies diagonally across the bay on the New Jersey shore.

I know of no village site where the evidences are so many and so well preserved, but in a little while every trace of its aboriginal association will have disappeared, as embryo streets traverse its domain in every direction and hotels and cottages are fast occupying ground where once flourished perhaps one of the most important Indian settlements on the coast.

The remains are about five hundred feet from the sea which they parallel for about a mile, and notwithstanding their dangerous proximity have suffered little from abnormal tides by reason of a natural barrier of protecting dunes, ten to twelve feet in height, which extend along the beach from Rehoboth almost to Henlopen.

A ridge of intersecting sand hills divides the encampment into about equal parts, and as the southern half is on a higher plane, the two may be called an upper and lower encampment. On its southern boundary is Rehoboth Bay, a charming bit of water, once the habitat of clams and oysters and within fifty years famous as the feeding ground of immense flocks of geese and ducks in their southern flight.

These doubtless were also the conditions that prevailed during the life of the encampment. All this is now changed. Since the spot has become accessible to sportsmen the wild fowl have gradually disappeared, and this must also be said of the mollusks; and the bay, no longer navigable, is a shallow expanse of water given over to myriads of hard and shelled crabs and fast yielding to subsidence.

Skirting a portion of the western boundary of the encampment, we behold one of those phenomenal freaks of nature not often met with on our coast, namely, three lakes whose waters are as fresh and clear as any in our northern latitudes, although within a few feet of the salt sea, and abundantly supplied with perch. The largest covers some fifty acres and has a mean depth of five feet, the quantity of water in each remaining the same in all seasons, exhaustion from evaporation being supplied by hidden springs.

It will thus be seen that in selecting Rehoboth the Indian displayed a keen appreciation of its un-



surpassed natural advantages. It was an ideal spot for an encampment; every requirement that appealed to his savage nature centered in the locality. Added to a delightful mean temperature were fish, clams, oysters and crabs in abundance; large and small game roamed the adjacent forest, and the open spaces or windrows were adapted then as now for raising the highly esteemed and almost venerated maize.

The character of the ground on which a large part of the town stood is in itself a revelation. Much of it has a level, compact and apparently graded surface, entirely destitute of vegetation, not alone the result of nature's handiwork, but in great part due to the tread of successive generations; a conclusion that must appeal to the most casual observer, nor can he fail to notice the soil immediately beyond the limits of the encampment where it is loose and deep and covered with a luxuriant growth of heather.

Small conical elevations, composed of clam, oyster and mussel shells, broken pottery and dismembered hearth stones, the embers and refuse of aboriginal camp fires are to be seen everywhere. These vary in size as they have been protected from the elements. The well sheltered appear to have retained much of their original shape; many have partially succumbed to the leveling process of wind and rain, and there are still others in the open that have been razed to the ground.

There are no large shell-mounds at Rehoboth and presumably never have been, as the number and position of those extant preclude such a conclusion.

From one of the mounds I gathered some bones which were identified by Professor Joseph Leidy, to whom I submitted them, as those of the deer and dog and were split as well as calcined, the condition in which they are invariably found. It was interesting to discover that in every stone picked up within the encampment one could trace the fragments of an implement; and here it should be remembered that stones are not an indigenous product of this part of Delaware, of which it has been said in a spirit of irony that none are to be found in Sussex County, where the remains are situated, larger than an ordinary pebble. On account of this dearth of material the stone age of Delaware has an interest exclusively its own.

Adjoining the shell heaps, where naturally the huts of the native once stood, I found more than a hundred stone specimens, consisting of arrow and spear heads, shucking stones, corn mills or dough-boards, flaking hammers and celts. One of the latter is an unusually fine specimen of black jasper, seven inches long, with a cutting edge three inches wide, whence its lines taper gracefully back to a blunt point an inch in diameter. A large and deep finger pit on the flat side proved that it was an unhafted implement.

The most noteworthy surface find, however, was some thirty copper beads which the shifting sands had exposed. These were made of strips of unwelded virgin copper rolled into small cylinders from a quarter to a half an inch in length. Had the beads been of brass they would have lost much of their interesting antiquarian value, as in early colonial days the Indians obtained brass from the whites, which they highly prized for making ornaments.

VILLAGES ON THE EASTERN SHORE OF  
MARYLAND.



CROSSING the peninsula in a direct line from Rehoboth we enter that fertile and picturesque part of Maryland which stretches along the Chesapeake to the Atlantic known as the "Eastern Shore." This was the country of the powerful Nanticokes, and wherever a stream or inlet indents the shore line the remains of their villages will be found occupying the thickly timbered bluff which rises eighty feet above the waters of the bay and gives the shore a bold and striking aspect.

The Nanticokes were first mentioned by the adventurous Captain John Smith, who encountered them in 1608 in his first voyage up the Chesapeake. He describes them as living in large and flourishing towns, of superior intelligence, and enjoying a high order of aboriginal civilization. In 1712, or a little over a century later, they still numbered some five hundred people, and the same year records the death of their last "king," the famous Wyniaco. Rapid disintegration followed, as in 1792 we learn from a letter of Mr. Van Murray,<sup>1</sup> addressed to the Hon. Thomas Jefferson,

<sup>1</sup> At the request of Hon. Thomas Jefferson, President of the United States, Mr. William Van Murray, of Cambridge, Md., prepared a vocabulary of the Nanticoke language from informa-

this once numerous tribe had dwindled by death and removal to a mere handful of nine persons, who were quietly lingering until final disbandment among the ruins of one of their ancient towns near Cambridge, Maryland, called Locust Neck, on Goose Creek, a branch of the Choptank River. At the date of the letter what was left of the town consisted of two "modern" frame buildings and four genuine wigwams thatched over with the bark of the cedar and very old. It is much to be regretted that drawings were not made of these undoubted prehistoric relics.

In 1889 Dr. J. L. Dawson, of Cambridge, while engaged in archaeological field work on the site of this old Nanticoke village, discovered among the refuse on the river bank several feet below the surface the only perfect example extant of a prehistoric paddle, which he was good enough to send me.<sup>2</sup> He remarks in describing it: "I am not aware that other paddles have been found in this country under similar circumstances."

tion furnished by survivors of the tribe, and in that connection wrote to Mr. Jefferson under date of September 18, 1792, in which he refers to the old town of Locust Neck, where there still lived Whie-m-quaque, or Mulberry Tree, widow of the "Colonel," the last chief. Mrs. Mulberry was then a very old woman, but retained all her faculties, which enabled her to relate many interesting reminiscences of her people. The vocabulary of the Nanticoke dialect referred to is in the collection of the American Philosophical Society.

<sup>2</sup> Dr. Charles Rau figures one in his "Prehistoric Fishing in Europe and America," which was found in a fragmentary condition in the mud of a creek on Long Island.

The Maryland paddle was found protruding from the shell bank, imbedded in its moist debris, to which, together with the fact that it was cut from indigenous live oak, it owes its preservation. It is rough and apparently unfinished, as if it had been lost ere the final touches had been bestowed upon it; and what lends color to this belief is that its surface is charred and covered with incisions, such as a stone gouge would make, thus showing the means employed in shaping it. It measures four feet two inches over all, of which the blade is ten inches long and four inches in its widest part, but differs from that of the conventional paddle, being rather long and narrow and terminating in a blunt point. While one side of the blade is oval the other is roughly worked flat, as if that side were meant to be presented to the water. About midway of its length are two small perfectly drilled holes, but for what purpose they were made is not clear. Although the paddle suffered some slight mutilation at the time of its discovery, it may be said to be perfect, save the encroachments of dry rot. It has also that dead-gray color peculiar to wood which has been long buried in the water.<sup>1</sup>

<sup>1</sup> This is one of perhaps less than half a dozen prehistoric objects of wood of American origin that has not succumbed to inevitable decay, and we may not hope to add many others to the number.

Those that have been recovered are from swamps, submerged forest lands, ancient village sites and shell-heaps, where the con-

## STILL POND CREEK VILLAGE.

If, as I have said, we may with some degree of accuracy estimate the age of an abandoned village from the extent of the refuse, it would be within the bounds of conservatism to credit the remains of the ancient town on the south bank of Still Pond Creek, Eastern Shore of Maryland, with at least a thousand years.

ditions have favored their preservation, and are mostly rude and unimportant.

The National Museum at Washington contains a curious implement taken from a shell deposit on the coast of Florida, made of a conch shell pierced by a wooden handle. When found, the latter hung loosely in its decaying socket, but all traces of the method by which it had been secured had disappeared. In the absence of better information, this specimen is called a "club," but appears better adapted for use as a water dipper.

In 1889 I examined a unique and very beautiful example of aboriginal wood carving in the possession of the Public Library at Thomasville, Georgia. This was a small flat-bottomed bowl, carved out of a solid block of curled black walnut of great density, and its exact as well as graceful lines showed no defined warp or fissure. The sides are six inches long, three and a half inches deep and three eighths of an inch thick, with slightly rounded corners, a polished surface and carefully excavated interior. In design and finish it would not discredit the performance of an experienced wood carver with every modern appliance for carving at his command, so accurate and faultless are the measurements. Two diminutive ears, too small to be of use, decorate the rim on opposite sides, the counterpart of those frequently seen on aboriginal earthenware. This peculiarity would have established its identity had there been no other way of doing so. It was found immersed in water at a depth of six or seven feet below the surface by some workmen engaged in sinking a well, and justifies a claim to great antiquity.

The creek, which empties into the Chesapeake about sixteen miles north of Cambridge as the crow flies, gets its name from the resemblance to a pond of that part near its mouth which, from an insignificant stream, broadens into a sheet of water almost a mile in width with no visible outlet.

Unlike the fishing stations on the exposed sea coast, this was the permanent seat of a large tribal community, and as we are in the land of the Nanticookes we may reasonably suppose it to have been one of the towns mentioned by Captain Smith.

To the accustomed eye of the archaeological field-worker it presented conditions that were unusually attractive. Situated on private property, a mile or more from any public highway, with a considerable portion covered with a forest of primeval pines and liveoaks, we are led to believe that here, at least, the ground had changed little if any since the Indian occupation.

Save here and there an outcropping of shells, there was no surface indication that this was once a vast encampment, but upon the removal anywhere among the timber of the top layer of moss and several inches of leaf mold the shells and debris are exposed.

The remains also follow the windings of the creek for a mile from its mouth, and if approached by water are visible underlying the top soil of the bluff whence detached masses of shells have rolled to the water's edge. Indeed, the magnitude of



the remains exceed in area anything I have seen north of Florida; so great as to suggest, as a profitable financial venture, the erection of kilns at the head of the creek for burning the shells for the lime. At the time of my visit the lime burner had collected for that purpose in a nearby ravine shells roughly estimated at over two hundred tons, and yet, notwithstanding this drain on the shell-heaps, which began many years before the Civil War and still goes on with an occasional interregnum, the visible supply warrants the continuance of this industry for a long time to come.

The shells appear to be exclusively those of the common oyster, presumably from local beds or those easily accessible, but long since exhausted.

That the Indian was a great fisherman we have every evidence, but he was not a sailor, hence his disinclination to venture in his inadequate dugout as far as the sea, the habitat of the clam, thus explaining the absence of that mollusk.

The old town may be reached by water as well as on the land side, but as unfortunately there was no "Friendly Inn" for the entertainment of the wayfarer within five miles of Still Pond, and although I made several visits, the time at my command was necessarily brief, restricting my observations to a general survey of its extensive area and salient antiquarian features, without permitting excavations. This was disappointing, as only a short time before our visits a negro, in ploughing





PLATE IV. COPPER SPEAR HEAD  
FROM INDIAN GRAVE :  
STILL POND, MARYLAND

in a field adjoining the shell-mounds, turned up an Indian grave, one perhaps of many others in the same vicinity had search been made. The fragile contents were destroyed in the impact, but two metallic objects attracted the attention of the ploughman, which proved to be implements of copper.

Apart from the interest with which the latter are regarded on account of their rarity and the mystery surrounding their fabrication, they possess an additional attraction when the virgin copper is foreign to the locality where they are found, as in the case of the implements in question.

One is a hoe blade of the conventional type, well shaped and very heavy, seven inches in length, with a semicircular edge six inches wide. The other is a spear head of absorbing interest, and although it has no counterpart, so far as known, among prehistoric copper objects and quite startling in its strong resemblance to the European type, is without doubt a work of native industry.

As shown in the engraving a flange extends over the entire length of the blade, forming a double-cutting edge, and terminating at the hilt in a shank marked with deep clear-cut notches for the purpose of securing it to a shaft. The point and upper portion are corroded and without temper, while the lower half apparently has this quality and retains its original polish. In an effort to restore the temper the apothecary at Still Pond destroyed the

symmetry of one of its edges. It is twelve inches long and one and one quarter inches in the widest part.

As there was no conclusive testimony to the contrary it had always been accepted as true that the American aborigine hammered the virgin metal into shape when cold. In this spear head, however, we have a specimen that shows not only familiarity with smelting, but what is of far more interest, with the secret of tempering.

Through the courtesy of the gentleman on whose plantation the Still Pond encampment is situated, I was permitted to take this specimen to Philadelphia where those best qualified to speak pronounced it perhaps the most remarkable example of aboriginal American copper work extant. The Smithsonian Institution and the Archaeological Museum of the University of Pennsylvania were both unsuccessful in their endeavors to purchase it for their collections.

A path from the old town to the foot of the bluff leads to a spring of great volume and purity, known to this day as "Indian Spring," which gushes from the gravel bank a few feet from the ground, and after forming a considerable pool at the base flows into the creek. It was not far from here that we picked up an ancient anchor stone of steatite, which, through some strange coincidence, was found attached to the line of a modern skiff.

## POTTERY OF THE MIDDLE ATLANTIC STATES.



IN closing this brief account of perhaps the most characteristic of the village sites on the sea coast of the Middle States, it would be incomplete without a comparative description of the indigenous pottery; and in approaching this subject we must remember that as we have neither architecture nor sculpture to aid us, our knowledge of aboriginal culture within the domain of the United States must in great part be obtained from a study of this primitive industry.

In contemplating the custom which prevailed among all primitive people, and still obtains in many instances, of depositing with their dead articles of food in earthenware containers, the conclusion is obvious that the pottery thus dedicated was superior to that in ordinary domestic use. As a matter of course this was not the case in the first instance, but with the development of the art, vessels for mortuary purposes became a specially prepared type excelling in design and decoration, with which the museums of the world have been enriched with thousands of examples.

This burial rite was scrupulously observed by the North American aborigine. It had for its purpose the propitiation of the spirits on behalf

of the departed upon his entrance into the realms of the Happy Hunting Grounds. Hence there is no grave without its pottery, and while the mound builders were lavish in the observance of this custom, an Indian tomb east of the Alleghanies rarely contains more than a single vase.

As in every department of aboriginal domestic labor the potters were women, to whom must be credited the authorship not only of the crude pottery of our eastern coast but the beautiful specimens from the Mississippi Valley. As the latter are familiar to every student of American antiquities it is only necessary to say by way of comparison that they rank with the best efforts of the ancient Mayas of Central America. Indeed, in the light of recent researches, we are irresistibly led to believe that the mysterious people who inhabited the fertile Mississippi Valley were the degenerate descendants of the Mayas and reproduced their ceramic forms. Hence the pottery from the western mounds includes an almost endless variety of shapes, intricate and graceful and sometimes grotesque, with many imitations of the human form, as well as birds, animals and reptiles. Pigments were employed in their decoration, they exhibit a high order of mechanical ability and the designs were invariably finished with a flat base—the natural development of the potter's art.

From every point of view the earthenware from the mounds is so incomparably better than that







PLATE V. INDIAN POT FROM DEERFIELD, MASSACHUSETTS,  $4\frac{1}{2}$  INCHES HIGH.



PLATE VI. INDIAN POT FROM BOLTON, VERMONT, 11 INCHES HIGH.

found east of the Alleghanies as to lead the expert to claim for the latter, if not greater antiquity, at least a different origin. The character of the materials of the Atlantic Coast pottery, the workmanship, the monotony of the designs and the crude attempt at decoration, all point to this conclusion. Briefly it occupies an interesting nich of its own.

However, it is hardly within the scope of this article to enter into a discussion, or to endeavor to establish a claim to priority for the pottery of the Eastern States. Indeed, such an attempt must necessarily fail in view of the small number of perfect specimens that have been recovered. It may surprise the uninformed to learn that the entire number will not exceed twenty, and of these one half as well as the most interesting are from graves and rock tombs in Pennsylvania. Compare this surprisingly small number with the thousands that have been exhumed without a fracture from the ancient tumuli west of the Alleghanies.

Incredible as it may sound I am told that the National Museum at Washington, which contains the most complete collection of American pottery in the world, within two years did not possess a single perfect specimen from the Eastern and Middle States. It had, however, three colored plaster casts deposited by Professor Hitchcock, of Amherst, Mass., of clay vessels that were found in New England. One of them is figured in Vol. 5, page 14, of the *American Naturalist*, and this pot,

together with the largest of the three, is in the collection of the University of Vermont at Burlington, and the original of the third cast is in the possession of Mr. George Sheldon, of Deersfield, Mass., who found it in the lot adjoining his home. "I know of but one other vessel of this nature," says Professor Hitchcock, "ever found whole in New England. This is in the hands of Dr. S. A. Green, of Boston."

I have ascertained that New Jersey has contributed but one unbroken vessel to the group, and thus far neither Delaware nor Maryland are represented other than by fragments.

In 1890 I was shown the convex base of a pot as large as a common earthenware pie plate that was thrown out of an Indian grave at Felton, Delaware, and rescued from complete oblivion by the farmer's wife who saw in it a convenient soap dish.

In walking over the spot where it had been found a few weeks afterwards I picked up the remaining fragments. The clay was nearly an inch thick, very rough and without embellishment, and when intact the bowl had a capacity of about half a gallon. As a general thing, however, the earthenware of New Jersey, Delaware and Maryland was made to contain hardly more than a quart.

Of the designs of these vessels it may be said they adhere undeviatingly to the vegetable form and like the gourd terminate in a convex base which requires support when resting upon the earth.





PLATE VII. POTTERY FROM INDIAN GRAVES; LUZERNE COUNTY, PENNSYLVANIA.

I am not aware of the existence of a single specimen from any part of the Atlantic Coast with a flat bottom, and where this feature occurs in pottery from Gulf it must be attributed to some wandering family of Maya ancestry.

In treating the subject of decoration it is necessary first to describe the larger vessels, evidently intended to withstand rough handling, of which the clay is thick—from a half to one inch—and the materials coarse. Physically this class resembles our modern earthenware, but the clay is less cohesive as if insufficiently baked and is destitute of ornamentation. In the smaller pots, however, we cannot fail to notice a delicacy that pertains to them alone. In these the decorations vary but are of the simplest description, consisting in some cases of two diminutive ears, and in others of finger nail impressions and incised parallel lines encircling the rim. Photography has demonstrated that the shallow tracings which cover the exterior of nearly all fragments of our eastern pottery, and until recently regarded as a decoration, were simply those made on the soft clay by a species of coarsely woven vegetable fibre in which the vessel was enclosed during the early stages of firing and prevented disintegration. Although some of the vessels were artificially colored a bright red as if to conceal the inequalities of the clay, there is no record of the existence within the territory we are considering of a pot ornamented with a colored design of any

kind and the art of glazing was unknown. Nor are there specimens of bottle-shaped or long-necked vases so frequently met with among the mound builders and in same parts of the South; and no attempt was made to copy the human or any other form of life. The nearest approach thereto are little grotesque human heads or masks stuck on the outside of the vessel below the rim. A number of fragments thus decorated were collected in the State of New York by Frank Hamilton Cushing and presented to the National Museum at Washington, and it will be observed that a perfect vase similarly ornamented is among those discovered in Pennsylvania.<sup>1</sup>

It has been reserved for the latter State to furnish the most characteristic examples from the eastern coast, the majority of which were recovered from graves and rock tombs in Wyoming Valley and the adjacent Blue Ridge Mountains, and although they were all found within a radius of forty miles, there are no two identical in shape, and each has a different decoration. Take for example the Tioga group which has the distinct merit of variety. They were found in Tioga

<sup>1</sup> In the spring of 1883 the Wyoming Historical and Geological Society instituted some researches on the Susquehanna River near Wilkes-Barre, Pa., which resulted in the discovery of a number of Indian graves, and from these were recovered the valuable specimens of pottery portrayed in the engraving. See "Proceedings and Collections of the Wyoming Historical and Geological Society," Vol. 2, Part 1, page 55.







PLATE VIII. SKULLS FROM INDIAN GRAVES; LUZERNE COUNTY, PENNSYLVANIA.

Township, Luzerne County, in three adjoining graves. On account of certain peculiarities of form I call them the Pennsylvania variety, and while they all follow the lines of the gourd, the monotony of this shape is relieved by a high decorated rim with flaring lips. They were made to contain from a half to one gallon and were therefore much larger as well as the most pleasing of the mortuary earthenware of the eastern coast.

Steatite or pot-stone vessels were also employed to some extent by the natives who lived in the neighborhood of the Virginia and Pennsylvania deposits of that mineral, and a few specimens naturally drifted into the contiguous States. Notwithstanding the susceptibility of the material and the strength and endurance of the vessels, little attention was given to their decoration, and as a class they were shallow, rough hewn and clumsy.

In summing up the difficulties under which these ancient potters of our eastern coast prosecuted their art, we cannot but express our astonishment at the general excellence of their work and the patient industry that was required to perfect it, unaided by any mechanical appliance. As the product of an untutored savage it represents not only his earliest economic impulse but his first attempt at decorative art, and as he lived under the trees what more natural than to reproduce in his rude earthenware the form of the objects he saw about him, namely, the gourd, the pumpkin and the melon?

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